

CLAIMS

We claim:

1 1. A gasification reactor vessel comprising:
2 a pressure shell, said pressure shell having an elongated encircling body wall and shell
3 ends at each of opposite ends of said body wall;
4 a plurality of cooling conduits extending circularly around an inner side of said body
5 wall, said conduits being fixedly connected to said inner side, interior spaces of said cooling
6 conduits being in communication with said body wall inner side;
7 a fluid supply conduit communicating with common ends of said cooling conduits for
8 supplying a coolant to said cooling conduits;
9 a fluid discharge conduit communicating with opposite ends of cooling conduits for
10 outletting heated coolant from said cooling conduits;
11 a layer of thermally protective material contactingly covering said cooling conduits; and
12 anchor ties fixedly connected to said cooling conduits and embedded in said protective
13 material covering.

1 2. A gasification reactor vessel according to claim 1, wherein said thermally
2 protective material covering is a refractory material.

1 3. A gasification reactor vessel according to claim 2, wherein each cooling
2 conduit comprises a pair of spaced webs fixedly connected at common ends of each to said
3 body wall inner side, and a bridging piece joining opposite ends of said webs.

1 4. A gasification reactor vessel according to claim 3, wherein said cooling
2 conduits are fixedly connected to said body wall inner side at circularly spaced locations
3 thereon.

1 5. A gasification reactor vessel according to claim 4, wherein said refractory
2 material layer fills spaces between adjacent cooling conduits and covers said body wall inner
3 side between said adjacent cooling conduits.

1 6. A gasification reactor vessel according to claim 5, wherein anchor ties are
2 fixedly connected to said body wall inner side in the spaces between adjacent cooling conduits
3 and are embedded in the refractory material layer filling said spaces.

1 7. A gasification reactor vessel according to claim 3, wherein the cooling
2 conduits extend around the inner side of said body wall with the webs of each fixedly
3 connected to a web of adjacent cooling conduits.

1 8. A gasification reactor vessel according to claim 7, wherein said cooling
2 conduits are fixedly connected to the body wall inner side and to each other with gastight and
3 watertight connections.

1 9. A gasification reactor vessel according to claim 4, wherein said cooling
2 conduits are fixedly connected to the body wall inner side with gastight and watertight
3 connections.

1 10. A gasification reactor vessel according to claim 3, further comprising a
2 refractory lining covering said refractory layer.

1 11. A gasification reactor vessel according to claim 10, wherein said refractory
2 lining comprises a brickwork lining.

1 12. A gasification reactor vessel according to claim 1, wherein a cross section
2 of said cooling conduits is one of an oval, a semicircle and a polygon.

1 13. A gasification reactor vessel according to claim 1, further comprising a
2 caked slag layer covering said thermally protective material layer.

1 14. A method for cooling a gasification reactor vessel having a pressure shell
2 and a refractory lining disposed at an inner side of a gasification pressure shell, comprising:
3 supplying a flow of coolant at a pressure greater than a gasification operating pressure
4 in a reactor space of said pressure vessel through conduits positioned intervening the refractory
5 lining and an inner side of the pressure shell with the refractory lining in contact with said
6 conduits, the conduits being fixedly connected to said inner side so that the coolant flow is
7 isolated from the refractory lining and no pressure of said coolant flow is transmitted to said
8 refractory layer.

1 15. A method according to claim 14, comprising disposing the conduits
2 lengthwise of the pressure vessel, and in an encircling array at said inner side.

1 16. A method according to claim 15, comprising anchoring said refractory
2 layer to said conduits with anchoring ties.

1 17. A gasification reactor vessel comprising:
2 a cylindrical pressure shell;
3 a plurality of channel members extending lengthwise of said pressure shell in a circular
4 array around an inner side of said pressure shell, said channel members being fixedly
5 connected to said inner side to provide a corresponding plurality of closed coolant flow
6 courses;
7 an encircling protective layer of refractory material covering said channel members and
8 being in heat conductive contact with said channel members; and
9 an encircling lining of at least one of a caked slag and a refractory covering said
10 protective layer.

1 18. A gasification reactor vessel according to claim 17, wherein the channel
2 members are connected to said inner side of said pressure shell with gastight and watertight
3 welded connections.
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